



SEQUENCE LISTING

<110> VAN DEN BOOM, DIRK
BOCKER, SEBASTIAN

<120> FRAGMENTATION-BASED METHODS AND SYSTEMS FOR SEQUENCE VARIATION DETECTION AND DISCOVERY

<130> SEQ-2073-UT

<140> 10/723,365
<141> 2003-11-26

<150> 60/429,895
<151> 2002-11-27

<160> 85

<170> PatentIn Ver. 3.2

<210> 1
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 1
Pro Phe His Leu Leu Val Tyr
1 5

<210> 2
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (5)
<223> Any amino acid except pro or arg

<400> 2
Ile Glu Gly Arg Xaa
1 5

<210> 3
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<220>
<221> MOD_RES
<222> (5)
<223> Any amino acid except pro or arg

<400> 3
Ile Asp Gly Arg Xaa
1 5

<210> 4
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<220>
<221> MOD_RES
<222> (5)
<223> Any amino acid except pro or arg

<400> 4
Ala Glu Gly Arg Xaa
1 5

<210> 5
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<220>
<221> MOD_RES
<222> (2)
<223> Variable amino acid

<220>
<221> MOD_RES
<222> (5)
<223> Variable amino acid

<400> 5
Pro Xaa Gly Pro Xaa
1 5

```

<210> 6
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 6
      cagtaatacgtactcaactata gggagaaggc tccccagcaa gacggactt 49

<210> 7
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 7
      aggaagagag cgccctggca aagtacac 28

<210> 8
<211> 340
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 8
      gggagaaggc tccccagcaa gacggacttc ttcaaaaaca tcatgaactt catagacatt 60
      gtggccatca ttccttattt catcacgctg ggcacccgaga tagctgagca ggaaggaaac 120
      cagaaggcg agcaggccac ctcccctggcc atcctcaggg tcatccgctt ggttaagggtt 180
      ttttagaatct tcaagctctc ccgcactct aaggccctcc agatcctggg ccagaccctc 240
      aaagtagta tgagagagct agggctgctc atcttttcc tcttcatcgg ggtcatccctg 300
      ttttcttagtg cagtgtactt tgccgaggcg ctcttttctc 340

<210> 9
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 9
      cccagtcacg acgttgtaaa acg 23

```

```

<210> 10
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 10
      agcgataac aatttcacac agg
      23

<210> 11
<211> 117
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 11
      cccagtcacg acgttgtaaa acgtccaggg aggactcacc atggcattt gattgcagag 60
      cagctccgag tccatccaga gcttcctgca gtcacctgtg tgaaattgtt atccgct    117

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Illustrative
      nucleotide sequence

<220>
<221> modified_base
<222> (1)..(3)
<223> a, c, g, t, unknown, or other

<220>
<221> modified_base
<222> (8)..(10)
<223> a, c, g, t, unknown, or other

<220>
<221> modified_base
<222> (12)..(14)
<223> a, c, g, t, unknown, or other

<220>
<221> modified_base
<222> (19)..(21)
<223> a, c, g, t, unknown, or other

<400> 12
      nnactgnnn mnnntgacnn n
      21

```

```

<210> 13
<211> 583
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic amplicon
      sequence

<400> 13
cttcagtgt cacaccgacc ctatgagtgg ggcggtaaaa ctgtccccat tttacacaca 60
ggaaactta gtgaatggca aggctgggtt tgagcccagc tctattgccc ccaaagataa 120
ggctccattc cctgctccat ttcccaggca tagggacttg tagggggctg gaaccccagg 180
atcaactctg ggctcagagg gccccagcaa taagtgactg ttgattactc ctgatcccaa 240
agctgacttc aggcaagctc cttggaggc gcagccccc cttgtatgc ccagtggcaa 300
tgatgttcat aatcccactc ctcagtgcag gttccacta agaaccatc atctcctacc 360
tcaaatggac ctcatgttt ctgagtaagc ctccctccat cctcaaatct ccagctgccc 420
cccacccact gcaatgactt cttcaggcct tccctccat cctcaaatct ccagctgccc 480
cctctgtct accttccact tccctctcca cacacaacct gcttaccaga gagctgagca 540
gagccaccaa cagaacttcc ccccccacgtc gctgctccca gtc 583

<210> 14
<211> 483
<212> DNA
<213> Mycobacterium abscessus

<400> 14
acgggtgagt aacacgtgg tgatctgccc tgcactctgg gataagcctg ggaaactggg 60
tctaataccg gataggacca cacacttcat ggtgagtggt gcaaagctt tgccgtgtgg 120
gatgagcccg cggcctatca gcttgggtt gggtaatgg cccaccaagg cgacgacggg 180
tagccggcct gagagggtga cccggcacac tgggactgag atacggccca gactcctacg 240
ggaggcagca gtggggata ttgcacaatg ggcgcaagcc tgatgcagcg acgcccgcgtg 300
agggatgacg gccttcgggt tgtaaacctc tttcagtagg gacgaagcga aagtgacggt 360
acctacagaa gaaggaccgg ccaactacgt gccagcagcc gcggtataac gtagggtccg 420
agcgttgc ggaattactg ggcgtaaaga gctcgttagt gtttgc gttttcgtg 480
aaa 483

<210> 15
<211> 495
<212> DNA
<213> Mycobacterium avium

<400> 15
acgggtgagt aacacgtggg caatctgccc tgcacttcgg gataagcctg ggaaactggg 60
tctaataccg gataggacct caagacgcat gtcttctgg gaaagctt tgccgtgtgg 120
gatggggcccg cggcctatca gcttgggtt ggggtgacgg cctaccaagg cgacgacggg 180
tagccggcct gagagggtgt cccggcacac tgggactgag atacggccca gactcctacg 240
ggaggcagca gtggggata ttgcacaatg ggcgcaagcc tgatgcagcg acgcccgcgtg 300
ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaaggtc cgggtttct 360
cgattgacg gtaggtggag aagaagcacc ggccaactac gtgcagcag ccgcggtaat 420
acgtagggtg cgagcgttgt ccggaaattac tggcgtaaa gagctcgttag gtggttgtc 480
gcgttgc taaa 495

```

```

<210> 16
<211> 495
<212> DNA
<213> Mycobacterium celatum

<400> 16
acgggtgagt aacacgtggg tgcactgccc tgcacttcgg gataagcttg ggaaactggg 60
tctaataccg gataggacca tggatgcat gtcttgtgg ggaaagctt tgcgggtgtgg 120
gatggggcccg cggcctatca gcttgtggt ggggtatgg cctaccaagg cgacgacggg 180
tagccggcct gagagggtgt ccggccacac tgggacttag atacggccca gactcctacg 240
ggaggcagca gtggggata ttgcacaatg ggcaagcc tgatgcagcg acgcccgtg 300
ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaagctg cgggtttcc 360
gggtggacg gtaggtggag aagaagcacc ggccaactac gtgccagcag ccgcggtaat 420
acgtagggtg cgagcgttgt ccggaattac tggcgtaaa gagctcgtag gtggttgtc 480
gcgttgttcg tgaaa 495

<210> 17
<211> 483
<212> DNA
<213> Mycobacterium fortuitum

<400> 17
acgggtgagt aacacgtggg tgcactgccc tgcactttgg gataagcctg ggaaactggg 60
tctaataccg aatatgacca cgcgttcat ggttgtgg ggaaagctt tgcgggtgtgg 120
gatggggcccg cggcctatca gcttgtggt ggggtatgg cctaccaagg cgacgacggg 180
tagccggcct gagagggtgt ccggccacac tgggacttag atacggccca gactcctacg 240
ggaggcagca gtggggata ttgcacaatg ggcaagcc tgatgcagcg acgcccgtg 300
aggatgacg gccttcgggt tgtaaacctc tttcataagg gacgaagcgc aagtgacgt 360
acctatagaa gaaggacccg ccaactacgt gccagcagcc ggccaataac gtagggtccg 420
agcgttgtcc ggaattactg ggcaatgg gctcgttagt gggttgtcgc gttgtcgtg 480
aaa 483

<210> 18
<211> 495
<212> DNA
<213> Mycobacterium gordoniæ

<400> 18
acgggtgagt aacacgtggg taatctgccc tgcacatcg gataagcctg ggaaactggg 60
tctaataccg aataggacca caggacacat gtccttgtgg ggaaagctt tgcgggtgtgg 120
gatggggcccg cggcctatca gcttgtggt ggggtatgg cctaccaagg cgacgacggg 180
tagccggcct gagagggtgt ccggccacac tgggacttag atacggccca gactcctacg 240
ggaggcagca gtggggata ttgcacaatg ggcaagcc tgatgcagcg acgcccgtg 300
ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaaggtc cgggtttct 360
cggtgtacg gtaggtggag aagaagcacc ggccaactac gtgccagcag ccgcggtaat 420
acgtagggtg cgagcgttgt ccggaattac tggcgtaaa gagctcgtag gtggttgtc 480
gcgttgttcg tgaaa 495

<210> 19
<211> 495
<212> DNA
<213> Mycobacterium intracellulare

<400> 19
acgggtgagt aacacgtggg caatctgccc tgcacttcgg gataagcctg ggaaactggg 60

```

tctaataccg gataggacac tttaggcgcac gtcttttaggt ggaaagctt tgcgggtgtgg 120
 gatggcccg cggcctatca gcttgggtgt ggggtgatgg cctaccaagg cgacgacggg 180
 tagccggcct gagaggggtgt ccggccacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggaaata ttgcacaatg ggcccaagcc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaaggtc cgggtttct 360
 cggattgacg gtaggtggag aagaagcacc ggccaaactac gtgcagcag cgcggtaat 420
 acgttagggtg cgagcgttgc ccggaaattac tgggctgtaaa gagctcgtag gtgggttgc 480
 gcgttgcgtg tgaaa 495

<210> 20
 <211> 495
 <212> DNA
 <213> *Mycobacterium kansasii*

<400> 20
 acgggtgagt aacacgtggg caatctgccc tgcacacccgg gataagcctg ggaaactggg 60
 tctaataccg gataggacca cttggcgcac gtctttgtgt ggaaagctt tgcgggtgtgg 120
 gatggcccg cggcctatca gcttgggtgt ggggtgacgg cctaccaagg cgacgacggg 180
 tagccggcct gagaggggtgt ccggccacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggaaata ttgcacaatg ggcccaagcc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaaggtc cgggtttct 360
 cggattgacg gtaggtggag aagaagcacc ggccaaactac gtgcagcag cgcggtaat 420
 acgttagggtg cgagcgttgc ccggaaattac tgggctgtaaa gagctcgtag gtgggttgc 480
 gcgttgcgtg tgaaa 495

<210> 21
 <211> 495
 <212> DNA
 <213> *Mycobacterium marinum*

<400> 21
 acgggtgagt aacacgtggg cgatctgccc tgcacttcgg gataagcctg ggaaactggg 60
 tctaataccg gataggacca cgggattcat gtcctgtgt ggaaagctt tgcgggtgtgg 120
 gatggcccg cggcctatca gcttgggtgt ggggttaacgg cctaccaagg cgacgacggg 180
 tagccggcct gagaggggtgt ccggccacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggaaata ttgcacaatg ggcccaagcc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaagggt cgggtttct 360
 cggattgacg gtaggtggag aagaagcacc ggccaaactac gtgcagcag cgcggtaat 420
 acgttagggtg cgagcgttgc ccggaaattac tgggctgtaaa gagctcgtag gtgggttgc 480
 gcgttgcgtg tgaaa 495

<210> 22
 <211> 492
 <212> DNA
 <213> *Mycobacterium scrofulaceum*

<400> 22
 acgggtgagt aacacgtggg caatctgccc tgcacttcgg gataagcctg ggaaactggg 60
 tctaataccg gataggacca cttggcgcac gtctttgtgt ggaaagctt tgcgggtgtgg 120
 gatggcccg cggcctatca gctagttgtgt ggggtgatgg cctaccaagg cgacgacggg 180
 tagccggcct gagaggggtgt ccggccacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggaaata ttgcacaatg ggcccaagcc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaagggt cactttgtgg 360
 gttgacggta ggtggagaag aagcaccggc caactacgtg ccagcagccg cggtaatacg 420
 tagggtgcgta gcgttgcgtg gaattactgg gcgttaaagag ctcgttaggtg gtttgcgtcg 480

ttgttcgtga aa	492
<210> 23	
<211> 485	
<212> DNA	
<213> <i>Mycobacterium smegmatis</i>	
<400> 23	
acgggtgagt aacacgtggg t gatctgccc tgcactttgg gataagcctg ggaaactggg 60	
tctaataccg aatacacccct gctggtcgca tggcctggta gggaaagct tttcggtgt 120	
gggatgggcc cgccgcctat cagcttggc gtgggggtgat ggcctaccaa ggcgacgacg 180	
ggtagccgc ctgagagggt gaccggccac actgggactg agatacggcc cagactccta 240	
cgggagggcag c agtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgcccgcg 300	
t gagggatga cggccttcgg gttgtaaacc tctttcagca cagacaagc gcaagtgcacg 360	
gtatgtgcag aagaaggacc ggccaactac gtgccagcag ccgcgttaat acgttagggtc 420	
cgagcgttgt ccggaattac tggcgtaaa gagctcgtag gtggttgtc gcgttgcgt 480	
tgaaa	485
<210> 24	
<211> 497	
<212> DNA	
<213> <i>Mycobacterium tuberculosis</i>	
<400> 24	
acgggtgagt aacacgtggg t gatctgccc tgcacttcgg gataagcctg ggaaactggg 60	
tctaataccg gataggacca cgggatgc at gtcttgggtt ggaaagcgct ttagcggtgt 120	
gggatgagcc cgccgcctat cagcttggc gtgggggtgac ggcctaccaa ggcgacgacg 180	
ggtagccgc ctgagagggt g tccggccac actgggactg agatacggcc cagactccta 240	
cgggagggcag c agtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgcccgcg 300	
tggggatga cggccttcgg gttgtaaacc tctttc acca tcgacgaagg tccgggttct 360	
ctcggattga cggtaggtgg agaagaagca c cgcccaact acgtgccagc agccgcggta 420	
atacgttaggg tgcgagcgtt g tccggaaatt actgggcgt a aagagctcgt aggtggtttg 480	
tcgcgttgtt cgtaaa	497
<210> 25	
<211> 499	
<212> DNA	
<213> <i>Mycobacterium xenopi</i>	
<400> 25	
acgggtgagt aacacgtggg t gacactgccc tgcacttcgg gataagcctg ggaaactggg 60	
tctaataccg gataggacca ttctgcgc at gtgggggtggt ggaaagtgtt tggtagcggt 120	
gtggatggg cccgcgcct atcagcttgcgt tggtgggggtg atggcctacc aaggcgacga 180	
cggtagccg gcctgagagg g tgtccggcc acactgggac tgagatacgg cccagactcc 240	
tacgggaggg agcagtgggg aatattgcac aatgggcgca agcctgatgc agcgacgccc 300	
cgtggggat gacggccttc ggg ttgtaaa cccctt ca c ctcgacgaa gctgcgggtt 360	
ttctcggtt gacggtaggg gcagaagaag caccggccaa ctacgtgcc a gcagccgcgg 420	
taatacgtag ggtgc a agcgtt g tgtccggaa ttactggcgt taaagagctc gtagggcgct 480	
tgcgttgtt tt cgtaaa	499
<210> 26	
<211> 492	
<212> DNA	
<213> <i>Mycobacterium paraffinicum</i>	

<400> 26
 acgggtgagt aacacgtggg caatctgccc tgcacttcgg gataagcctg ggaaactggg 60
 tctaataccg gataggacca cttggcgcac gccttgggt ggaaagctt tgcgggtgtgg 120
 gatggggcccg cggcctatca gcttgggt ggggtatgg cctaccaagg cgacgacggg 180
 tagccggcct gagagggtgt cccgcacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggata ttgcacaatg ggcaagggc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaaggct cacttcgtga 360
 gttgacggta ggtggagaag aagcaccggc caactacgtt ccagcagccg cggtaatacg 420
 tagggtgcgta gcgttgcgtcc gaattactgg gctgtaaagag ctcgttaggt gtttgcgtc 480
 ttgttcgtga aa 492

<210> 27
 <211> 483
 <212> DNA
 <213> *Mycobacterium interjectum*

<400> 27
 acgggtgagt aacacgtggg taatctgccc tgcacttcgg gataagcctg ggaaactggg 60
 tctaataccg gataggaccc cgaggcgcac gccttgggt ggaaagctt tgcgggtgtgg 120
 gatggggcccg cggcctatca gctagggtgt ggggtacgg cctaccaagg cgacgacggg 180
 tagccggcct gagagggtgt cccgcacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggata ttgcacaatg ggcaagggc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaagcgc aagtgacgg 360
 acctgcagaa gaagcaccgg ccaactacgtt gccagcagcc gcgtaatacg ttagggtgcc 420
 agcgttgtcc ggaattactgg ggcgtaaaga gctgttaggt gtttgcgtc gttgttcgt 480
 aaa 483

<210> 28
 <211> 484
 <212> DNA
 <213> *Mycobacterium aurum*

<400> 28
 acgggtgagt aacacgtggg tgatctgccc tgcactttgg gataagcctg ggaaactggg 60
 tctaataccg aataggacta cgcgtatgcac gtcgtgtggt ggaaagctt tgcgggtgtgg 120
 gatggggcccg cggcctatca gcttgggt gagggtacgg ctcaccaagg cgacgacggg 180
 tagccggcct gagagggtgtt cccgcacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggata ttgcacaatg ggcaagggc tgatgcagcg acgcccgcgtg 300
 ggggatgacg gccttcgggt tgtaaacctc tttcaccatc gacgaagcgc aagtgacgg 360
 acctggagaa gaaggaccgg ccaactacgtt gccagcagcc gcgtaatacg ctaggggtgc 420
 gagcgttgtc cgaaattactt ggggtaaag agctgttaggg tggttgtcg cgttgttcgt 480
 gaaa 484

<210> 29
 <211> 1542
 <212> DNA
 <213> *Escherichia coli*

<400> 29
 aaattgaaga gtttgcgtcat ggctcagattt gaacgctggc ggcaggccata acacatgca 60
 gtcgaacggta aacaggaaga agcttgcgttc ttgcgtgacg agtggcggac ggggtgagtaa 120
 tgcgtggaa actgcgtatgg gggggggat aactactggaa aacggtagct aataccgcac 180
 aacgtcgcaaa gaccaaaagag ggggacccatc gggccttgc ccatcgatg tgcccagatg 240
 ggatttagctt gtaggtgggg taacggctca cctaggcgcac gatcccttagc tgggtctgaga 300

ggatgaccag ccacactgga actgagacac ggtccagact cctacggag gcagcagtgg 360
 ggaatattgc acaatggcg caagcctgat gcagccatgc cgcgttatg aagaaggcct 420
 tcgggttcta aagtacttgc agcggggagg aagggagtaa agttataacc tttgctcatt 480
 gacgttaccc gcagaagaag caccgctaa ctccgtgcc gcagccgcgg taatacggag 540
 ggtgcacgcg ttaatcgaa ttactggcg taaagcgcac gcaggcggtt ttttaagtca 600
 gatgtgaaat ccccgggctc aacctggaa ctgcacatctga tactggcaag cttgagtctc 660
 gtagaggggg gtagaattcc aggtgtacgc gtgaaatgcg tagagatctg gaggaatacc 720
 ggtggcgaag gggccccctt ggacgaagac tgacgctcag gtgcgaaagc gtggggagca 780
 aacaggatta gataccctgg tagtcacgc cgtaaacgcgt gtcgacttgg aggttgc 840
 cttgaggcgt ggcttccgga gctaacgcgt taagtcgacc gcctggggag tacggccgca 900
 aggttaaaac tcaaataatgaa tgacggggc cccgcacaagc ggtggagcat gtggtttaat 960
 tcgatgcaac gcaagaacc ttacctggc ttgacatcca cggaaatttt cagagatgag 1020
 aatgtgcctt cgggaaccgt gagacagggtg ctgcacatggcgt gtcgactcgt cgtttgtga 1080
 aatgttgggt taagtcccgc aacgagcgc aacccttatcc tttgtgcca gcggtccggc 1140
 cgggaactca aaggagactg ccagtataa actggaggaa ggtggggatg acgtcaagtc 1200
 atcatggccc ttacgaccag ggctacacac gtgctacaat ggcgcataca aagagaagcg 1260
 acctcgcgag agcaagcgg a cctcataaag tgcgtcgtag tccggattgg agtctgcaac 1320
 tcgactccat gaagtccggaa tgcgttagaa tcgtggatca gaatgccacg gtgaatacgt 1380
 tcccgggcct tgcacacacc gcccgtcaca ccatggggat gggttgcaaa agaagttaggt 1440
 agcttaacct tcgggaggc gcttaccact ttgtgattca tgactggggat gaaagtgcgtaa 1500
 caaggttaacc gtaggggaaac ctgcgggttgg atcacccctc ta 1542

<210> 30
 <211> 340
 <212> DNA
 <213> *Bordetella avium*

<400> 30
 agagtttgcgat cctggctcag attgaacgcgt ggcgggatgc tttacacatg caagtcgaac 60
 ggcagcacgg acttcggctt ggtggcgagt ggcgaacggg tgtagtaatgt atcggaaacgt 120
 gccttagtgc gggggataac tacgcgaaag cgtagctaat accgcatacg ccctacgggg 180
 gaaagcgggg gacccctggg cctcgcacta ttagagcggc cgatatcgga ttagcttagtt 240
 ggtggggtaa cggctcacca aggcgacgt ccgtagctgg tttgagagga cgaccagcca 300
 cactgggact gagacacggc ccagactcct acgggaggca 340

<210> 31
 <211> 339
 <212> DNA
 <213> *Bordetella trematum*

<400> 31
 agagtttgcgat cctggctcag attgaacgcgt ggcgggatgc tttacacatg caagtcggac 60
 ggcagcacgg acttcggctt ggtggcgagt ggcgaacggg tgtagtaatgt atcggaaacgt 120
 gcccagtgc gggggataac tacgcgaaag cgtggctaat accgcatacg ccctacgggg 180
 aaagcggggg accttcgggc ctcgcactat tggagcggcc gatatcgat tagcttagtt 240
 gtggggtaac ggctcacca ggcgacgt cgtagctgg tttgagaggac gaccagccac 300
 actgggactg agacacggc cagactccta cgggaggca 339

<210> 32
 <211> 1496
 <212> DNA
 <213> *Bordetella petrii*

```

<220>
<221> modified_base
<222> (821)
<223> a, c, g, or t

<400> 32
cgctagcggg atgcttaca catgcaagtc gaacggcagc gcggacttcg gtctggcggc 60
gagtggcga cgggtgagta atgtatcgga acgtgcccag tagcggggga taactacgcg 120
aaagcttagc taataccgcg tacgcctac gggggaaagc gggggacctt cgggcctcgc 180
actattggag cggccgatata cgattagct agttggtggg gtaaaggcct accaaggcga 240
cgatccgtag ctggttttag aggacgacca gccacactgg gactgagaca cggcccagac 300
tcctacggga ggcagcagtg gggaaatttg gacaatgggg gcaaccctga tccagccatc 360
ccgcgtgtgc gatgaaggcc ttccgggtgt aaagcacttt tggcaggaaa gaaacggctc 420
tggctaatac ctggggcaac tgacgttacc tgccagaataa gcaccggcta actacgtgcc 480
agcagccgcg gtaatacgtg gggtgcaagc gttaatcgga attactggc gtaaagcgtg 540
cgcaggcgt tcggaaagaa agatgtgaaa tcccagggtc taaccttgggactgcatttt 600
taactaccgg gctagagtgt gtcagaggga ggttggaaattc cgcgtgttagc agtggaaatgc 660
gtagatatgc ggaggaacac cgatggcga ggcagcctcc tgggataaca ctgacgctca 720
tgcacgaaag cgtggggagc aaacaggatt agataccctg gtatgtccacg ccctaaacga 780
tgtcatctag ctgtttggggat cttcggtccct tggtagcgca nctaacgcgt gaagttgacc 840
gcctggggag tacgggtcgca agattaaaac tcaaaggaaat tgacggggac cccacaagc 900
gttggatgtatgttggattat tcgatgcac ggcggaaaacc ttaccccttgcatgtc 960
tggaatgccc aagagatttg gcagtgtcgca agagagaacc ggaacacagg tgctgcattgg 1020
ctgtcgtag ctcgtgtcgtag gagatgttgg gttaaagtccc gcaacggcgttgcatttt 1080
cattagttgc tacgaaaggg cactctaattt agactgcccgg tgacaaaccg gaggaagggtg 1140
gggatgacgt caagtcctca tggcccttat gggtaggggt tcacacgtca tacaatggc 1200
gggacagagg gctgccaacc cgcaaggggg agccaatccc agaaaccggca tcgttagtccg 1260
gatcgacgtc tgcaactcgat ctgcgtgaag tggaaatcgca tagtaatcgca ggatcagcat 1320
gtcgccgtga atacgttccc gggcttgcata cacaccggcc gtcacaccat gggagtgggt 1380
tttaccagaa gtagtttagcc taaccgcgaa gggggcgatt accacggtag gattcatgac 1440
tggggtgaag tcgtacaacaag gtagccgtat cggaaagggtgc ggttggatca cctcct 1496

<210> 33
<211> 363
<212> DNA
<213> Bordetella sp.

<400> 33
agagttttag cctggctca gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60
gcggatgtct ttttcgcaaa gagaggcagac acttgagtgg cgaacgggtg agtaacacgt 120
gagcgactca cttccgggtg ggggataact gtccgaaagg gcggctaata ctcgtatgc 180
tccctgaccg cccgggtcagt gagaaatgt ggcttcgtaa gaagctcatg ccagaagaga 240
ggctcgccgccc ccatcagcta gttggcgagg taacggctca ccaaggcaat gacgggtagc 300
tggatgttgc gtagtttgcag ccactctggg actgagacac ggcccaagact cctacgggag 360
gca 363

<210> 34
<211> 363
<212> DNA
<213> Bordetella sp.

<400> 34
agagttttag cctggctca gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60
gcggatgtct ttttcgtaa gaaagggtgac acttgagtgg cgaacgggtg agtaacacgt 120
gagtaactca cttccgggtg ggggataact gtccgaaagg gtggctaata ccccatatgc 180
tccctgaccg cccgggtcagt gagaaatgt ggcttcgtaa gaagctcaca ccagaagaga 240

```

ggctcgcc ccatcagctg gttggcagg taatggctca ccaaggcaat gacggtagc 300
 tggctgaga ggatggtcag ccacactggg actgagacac ggccagact cctacggag 360
 gca 363

<210> 35
 <211> 343
 <212> DNA
 <213> *Bordetella* sp.

<400> 35
 agagttgat catggctcag gatgaacgct ggcggcgtgc ttaatacatg caagtcgaac 60
 ggagggaggt agtaatactt tccttagtgg cgaacgggtg agaaacgcgt tggtagacctg 120
 ccccaagag cgggacaaca gaccgaaagg tttgctaata ccgcatacg tcttgctggc 180
 tagatggca agaggaaagg cgcgaaaggcg ctttgggagg ggcctgcgtc ccatcagcta 240
 gttgggggg taacagccca ccaaggcgat gacggtagg ggacctgaga gggtgacccc 300
 ccacaatgga actgaaacac ggtccataca cctacgggtg gca 343

<210> 36
 <211> 342
 <212> DNA
 <213> *Bordetella* sp.

<400> 36
 agagttgat catggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60
 gggagatgta gcgatatgtc tccagtggcg aacgggtgag taacgcgttgc tgacacctgc 120
 ccgaagagcg ggataacaga cgcgaaaggac tgctaatacc gcatgagctc tcggcagtta 180
 gaggggccga gaggaaaggc cgaaaggcg tttgggagggg gcctgcgtcc catcagctag 240
 ttggcgaggt aagagctcac caaggcgatg acgggttaggg gacctgagag ggtgacccc 300
 cacaatgga ctgaaacacg gtccatacac ctacgggttca 342

<210> 37
 <211> 342
 <212> DNA
 <213> *Bordetella* sp.

<400> 37
 agagttgat catggctcag attgaacgct ggcggcatgc tttacacatg caagtcgaac 60
 ggcagcacgg gcttcggcc ggtggcgagt ggcgaacggg tgagtaatgc atcggaaacgt 120
 gcccatttgt gggggataac gcggcgaaag tcgcgctaatt accgcatacg ccctgagggg 180
 gaaagcgggg gattcttcgg agcctcgccg aattggagcg gccgatgtca gattagctag 240
 ttggtagggt aaaggcctac caaggcgacg atctgtagcg ggtctgagag gatgatccgc 300
 cacactggga ctgagacacg gcccagactc ctacgggagg ca 342

<210> 38
 <211> 342
 <212> DNA
 <213> *Bordetella* sp.

<400> 38
 agagttgat catggctcag attgaacgct ggcggcatgc tttgcacatg caagtcgaac 60
 ggcagcacgg gcttcggcc ggtggcgagt ggcgaacggg tgagtaatgc atcggaaacgt 120
 gcccatttgt gggggataac gcggcgaaag tcgcgctaatt accgcatacg ccctgagggg 180
 gaaagcgggg gattcttcgg aacctcgccg aattggagcg gccgatgtca gattagctag 240
 ttggtagggt aaaggcctac caaggcgacg atctgtagcg ggtctgagag gatgatccgc 300

cacactggga ctgagacacg gcccagactc ctacgggagg ca	342
<210> 39	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 39	
agagttttagt cmtggctcag	20
<210> 40	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 40	
aaggaggtga tccakccrca	20
<210> 41	
<211> 38	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 41	
gtaatacgtac tcactatagg gacgggtgag taacacgt	38
<210> 42	
<211> 40	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Description of Artificial Sequence: Synthetic	
primer	
<400> 42	
attttaggtga cactatagaa tttcacgtac aacgcgacaa	40

```

<210> 43
<211> 418
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 43
accatgcctg ctgctccctg cctgccagcg ccctgcacat actttgcaca tggctggggg 60
ccagctgcgg gtccctgggg actcggatgg cacagagggc cccttctgc caccatcacg 120
gctcagacct cacgttccctg gagagttaggg gtgggggtgt gaggggcaga gggaaatggcc 180
gcaaaaaaaa tggtgggcgc ggtgccagcc ccccaaggccg attcccatcc agttgaccga 240
gcttgcgtg gtcaccgcgg tttccgcagg acagagtccc cacagccgct gggcaccccg 300
gtcccatccg cggccacttt cctgtctgaa gaccgcattt tgccgggtgt tgcttacggc 360
tcgcggcgc actctactga caagcggtgg gcggcctcac agactctccc agggccgc 418

<210> 44
<211> 269
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 44
cgccacaaaa atgattctga attagctgta tcgtcaaggc actcttgcct acggccaccag 60
ctccaaactac cacaagttt tattcagtca ttttcagcag gccttataat aaaaataatg 120
aaaatgtgac tatatttagaa catgtcacac ataaggtaa tacactatca aataactccac 180
cagttacccctt taatacaaaac tcacccctt atgaaaaattt atttcaaaaat accttacaaa 240
attcaatcat gaaaattcca gttgactgc 269

<210> 45
<211> 428
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 45
ggaaacatct tgctgctctc agagccagaa aatgctgaca gcctcatgt ggtggacttc 60
gaggacatca gttataacta taggtgagggc tggaaagatg gctccctata gatctgttcc 120
cayaggcgtc ttgaaaacag gccagctgcc cagggcattt gggactgaa tgtccacattt 180
attctccctcag gggctttgac attgggaacc atttttgtga gtgggttat gattataactc 240
acgaggaatg gcctttctac aaagcaaggc ccacagacta ccccaactcaa gaacagcagg 300
tatgtggggcc agaggctggg gagcaggacc catcctgtga ggaaggaggg aggtggagtc 360
tggaaggaat ggccggaaag gatgttaccc gggaaataact ccacagtctc cccaaattcct 428
gactcttg

```


<210> 49
<211> 533
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
amplicon sequence

<400> 49
tgcacagggt ttgatctctg agatgtttt tactctctgg cttggaraar rracagtcct 60
gtatgtatcaa gaccagac tttgtccccca gcccaaggct gcccctgggccc yagggacagt 120
atttggagac ttttgtggca gttttgcgtt ggaatcacct ggtgcctccc ttttgcgttca 180
cccaycctgt gcccagakcc ctttcgaag caccatatgc tttagatcc tcgagcagcc 240
tttgtggaca gcmaccctgg ggctggatc accatttatg taagaaaaaa aaggaagtgc 300
tggcccaagg tcccacagcc agcaaggttt agctgcactg cccaaaggc tcccttagyc 360
agctctctgt ttgtccccca gcccctcagc ccccccaggca gctctaaggg ctcagctgct 420
gcaggattcc ttagagaagc tgaagggtt gggcctcag ctctggccg gggcaagtct 480
ggccaaggcag catggcagcg atgaagtcca catgatcgaa gggtggatgc tta 533

<210> 50
<211> 422
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
amplicon sequence

<400> 50
caaggcttga ctgaaggacc tcatccagag tcactatcag agctcgctcc agcaactctcc 60
ttcatggagc cccagggtca gcagtggaga gggtcagagc accccccacaa ccccccacagc 120
gagatgaccc tggctcgatct tgcctctgcc accagagctg tgactgtggg caagatattt 180
tacagcagga ccagtttctt gtccgaaggc agggcttata acaggaccta actcaggata 240
cttgtgttga taaaatcatg ttgtggatc tttagggcc ttgcttctca aagagggggcc 300
ccaggccatc agcacacacccg gagggtgcag gggggagctc tcagccccac cccagccctc 360
tttacaagac ccccgctgg cacctgtggc gtggcacctg ttgtgcactcg ttgtttcaaa 420
gc 422

<210> 51
<211> 411
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
amplicon sequence

<400> 51
atccctctgt ctctccacca ggaactagaa ttttgtgtat cactgcgtt atttttttct 60
tttagttac cacatgtgtt ttttgtgtat agtaatataa cgatctgttt tgcttctcta 120
tattgtggca tatgtcgatct ttagcaactt gcttttagct gacgttctgt tttcaagatt 180
catccatgtt gctgcataaaa cctaacatcc acttactgtt gctggtgaw aacawwccaw 240
cawgwgagca cagacatttgc ggttgttcc aagacatgtt tcaatggcaa aaattaagat 300

gtctgacaaa accaagagtt ggagaggatg tggatggctt ggaattttat ctgctccttt 360
 acaccactc tggaaaaact gtacaaacaa ttctgcaagg attttccag a 411

<210> 52
 <211> 445
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 52
 tagtggaaag ggcacacagc tgtaactcca gacatctccc tattgcatgg atctgcactt 60
 gactgcgcgc ctagacagaa ggastgctat ttgtctttc tggctgacag ctgagcagga 120
 ccagcgtgg ctgcaaccaa ggagcattgc ttgcgttgc atacttctgc ttccaaacag 180
 ccctcttttgc ttgtgtctgtt gaagttccca taccgtctgc catctcagca tctcctctgg 240
 ctgaacctcc ttacagttt gtacyctayg ttaaatttagc tttcaattc ctccaggaga 300
 aaggactgtg gtatttagttt cttagaagcc ccaaagagcc cagttatggc cttaggcttgc 360
 actaggatcc catgaagcta gctggctggc tgggtgggtg gatcagaccg gcaaaagcac 420
 tgttaggagct tggaaacccag cagac 445

<210> 53
 <211> 425
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 53
 cctctcttc tctgcgtgac cttggctgg gagccaccca ggaaatgttc tcgagaaaatg 60
 aggactcaa ttccgaggtg gggagtgtca tctcctctc catgcctcag tttcccaatt 120
 tatagacaag gtggggmaggag ctttttgc gcccccttgg gctctgacat ttcatgaacc 180
 ggttaacaccc ctcccactca gcatgcacct ggatgccccaa ggcgggtgtc tgggagaaaag 240
 gtctgtccc acagtgaaga ggcgggtgt gcctccagcc tagggctggg gggcagggtc 300
 ctcagtgcag agggctgagt gggcttgc ttagacgggtt ggtcaaggag aggatgggtc 360
 agagacagtg agcacagagg gacgttca ggtgccttga gtggcacctc atggaaagaa 420
 gcccct 425

<210> 54
 <211> 424
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 54
 aaccccttac gggcctttta tgagctgtcg cagactcacc ggggtaatgg catcccccaa 60
 agctgtggtg tgaccstggg caatccctgg ggcctctcac tcccatgctg aggtgggtca 120
 gaccacacgc gcctgacctc aggctccctc tgggtgggc ctgggtccag gtgctggat 180
 ttgcgtatggg cctgcgggaa acatctagat cagctggtct cttaaggggcc gcaacgatga 240

acaggccccca ccctgtctcc tcacactgcc actggcagta cacaaggccc ttgcttattt 300
 atattctga caacctgtaa ctctggcag gccgactgca gctgacccc gctactgcag 360
 aaaatgaagc ccagacaaag gagagggcca cactgctccc aagtggtgg a gctgttggc 420
 caat 424

<210> 55
 <211> 393
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 55
 agatccccct gacactgact caaggctcag agaaggcggg cacctgccta aggccacccg 60
 gtagcccaa ggtgtatcaa gactccatcc caggacctct gggccctggg ctgcaggcct 120
 gggccctacc cactgattga ttggacctgt gcctccwcca ggtgatggtc aagtggactt 180
 tgaggagttt gtgacccttc tgggacccaa actctccacc tcaggatcc cagagaagtt 240
 ccatggcacc gactttgata ctgtcttctg gaaggatcc cctggctagt tgggacccag 300
 ggctgtgcac actgtggagt tctgttctgg agccagtgaa tggctggcc cacactgtaa 360
 agggggatg accacctcactt gcttggcact 393

<210> 56
 <211> 499
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 56
 gaacccatgt cctccacatc cacaagtctc caaagggttg gggattcctt gtgtgagctc 60
 cagatcccaa tcctctggtg gttcatggtg ttgtcaatga cakgtctctc cttgtcaccc 120
 cagatgaaa atgaggagac ttacagggtg cgaacattcc agataggtac aggggagaaaa 180
 ctgtgtgaagg ccctggttcc agccttctg ggtagaacca tctctcccta tgccacctgt 240
 ttggggccct cctgggactt tattaccgtg ccagacttca tggaggaact gtttaccagg 300
 tgaatgtcca tccccctccaa ctacacagtgg tgactgtctc cgacttagctg tgccttgagg 360
 atgtcaccga agccctctga gcctgttgc tcctttgtaa agcagtgaga tgaacctcat 420
 agggttctta tgggaactaa atggcctaag gcatggcaag caggtcccaa gtgcctggct 480
 ctgtgaaaag gctgctgag 499

<210> 57
 <211> 399
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 57
 ccaggacacgc tgaggacatt ccagaccctc scatctcatt cctggagcct cacaggcccc 60
 cagagccctt gaaaggcag aatggtca gctcagcagc cactcacact ggatcttata 120

gagggtgctg	gttccttct	tggacagcag	ggtgaggatgg	gcatccctcc	ggggatccac	180
tttgtgaaca	aagagggagc	ggaaccagct	gccttcattt	tccttggaaat	agaaaactgca	240
ggacagagga	gttgagggggg	acgcgcggag	gttggggggag	ccccagcaat	tccatccact	300
tggatgtcct	gctccctctag	accagtgtacc	cacatttctg	ggaacacaggc	cacggagtcc	360
tgtggcagct	ccagactgtg	aaatgctatt	ggagccagc			399

```
<210> 58
<211> 365
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence
```

```
<400> 58
ggggtagcag agtagtcccc agaacagggc tgggctgcat cccacatcca gagaggtgtg 60
ctgagtggac actaacatac ctattgttt tttagcttgt tcatgcagtc catgagggct 120
gggttagccac ctgagaatcg ccacagggtgc actgttgggg gtgagaggtt taggtcagtg 180
agctgctggg acccccccagca gatgacctcc ycaaggttgg ctaagtgggt gggacggggg 240
aggcgggggtg gcctggttcc ctgtagcagc aagactccct gagttccctc tgccttgggt 300
gaagaccatg ctggggaggg gatgacccta gacacaagtc taggagacct ggatttgagc 360
tccag 365
```

<210> 59
<211> 390
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
amplicon sequence

```
<400> 59
aatgaaccaa gcagagcaca gagcacagga gcacgacgag gatggtgaa ggcacccgc 60
aaatcctctg ggctccrtga ctaaagctga gggaggaagt agccatcagg gtcccttgg 120
tgccgtctgg tctcggact cttggagct gatcactctc ttgctccctg cctaggcccc 180
tctccagaag gcccgtatgcc cctgggtggg ggcgaggacg aggatgcaga ggaggcagta 240
gagttcctg aggccctcgcc ccccaaggcc gctctggagc ccaaggagtc caggagcccc 300
cagcagggtgg gaccacatg gaggcctgca gaacctgagc tgtgaactgg caaccctggc 360
tctggggcccg agtcaccttg cacaaggagg 390
```

<210> 60
<211> 396
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
amplicon sequence

<400> 60
cccatgacac tggcttacct tgtgccaggc agatggcagc cacacagtgt ccacccggatg 60
gttggatttg aagcagagtt agcttgtcac ctgcctccct ttcccccggac aacagaagct 120
gacctctttg rtctcttgcg cagatgatga gtctccgggg ctctatgggt ttctgaatgt 180

catcgccac tcagccactg gatccaagca gagttcaagt aagtactggc ttggggagca 240
 gggttgcagc ggcmgagcca gggctccac ccaggaagga ctmatcgcc agggtgtgg 300
 gaaacaggga gggtgttcag atgaccacgg gacacccttg accctggcc ctgtggagtg 360
 tttgtgcgg ttgtatgcctt ctgggtgtgg aattgt 396

<210> 61
 <211> 368
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 61
 cagagagcaa aggtcacagc tacctaaagt gttccactt caagcacaga ttgtatgcct 60
 gaagactaca taccttgcattatcaaccag ttcagcaagr gcaccaaaca agaattcgtg 120
 agtgggtctg aatgataaaa tactaaaagt cagcaaaaga attattgaag ttataattcc 180
 taataaaaaag ccatggttat aaaatattta agtttttgaa aaaaatctt aaaaccacca 240
 tttgcattgt ttttatacta ctcaggctt tccagagctc cccaaactccc ctcattgtt 300
 aatcttaac aagtccgtcc atctattcag aatgattat tcttcctatt ttgagttggg 360
 368
 aaaccac

<210> 62
 <211> 451
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 62
 gatgtacacc actccctgcc tcccgctta gaaatgaaga aaccatggct cagaggggtg 60
 tggaggctca cacagcatca cagggcccgaa agtggaggag ctggatatg gacacaggcc 120
 caccctgcctt cagaccacac ccctgtgcccc ccagccggcc caccacccac agaccccaga 180
 gggaggacgt caggcggtcca ggctggcacc tttagctgg gcaggccrcc gcggatggca 240
 tctgcaatgg caactgcacc cttggagcgc accaggcagt ccccaaaatt aatcacctcc 300
 acctgcccga aggtcttcaa ggctgttag ggggaagca kggtccagag tgagggtgca 360
 gaccacaccc cagccctcag caagccccgg gggcccccaca cggtcacatc ccaagccagc 420
 451
 caccacacac tgcctccctc tgcaagtcac c

<210> 63
 <211> 790
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 63
 tttagggaaaga agggccaaag cactccttgt agcactcacc cctacccttc caagccaccc 60
 cagccgggtgt aggtacctgt cttagcagc atcgctctgg actcagcttc cgaggacctg 120
 accagatctg gtctgcgtgt atcagctgtt tttgtttggc tctggaaagct aagaaacgtc 180

tggaaaaggcac tgggggtcacg gctgcctggc tagctcgccc gcccctaacc ttaggcgtgg 240
 atcgtacact cgggtccccaa gttgcccggcc ccatccccag ccatcaacttc ccggagctts 300
 agttcttcct tcagaaaatac gaaacaacgt gtcttggatg tcagacactca caccctctgc 360
 agtgctggga gtcccgaggg cctacgggccc gccttcggcc cggcccgccc tcagaaaaaag 420
 gcagccactg gcttaaggtc accaagaaag agcggagggg cggggctgcg gccaggctcc 480
 ggacttccag cccgggtcccg gttccggccc tgggctcccc aaaaccgcag agccccctcc 540
 caccgcactt atccatccga agcgttcaga cctgcccggc cttctgactc gaatccggta 600
 acctgataag tccgaagcg tccagtgagg gcggggcctc acgaaggcaa cccttcgcgc 660
 aacctatcg aatccccccct agcaacgctg tgcccygccc atatgggtcc ggcctcccaag 720
 cctccctaag cccttcccca ytgggctccc gcctgcgtg cttagcgaggc wggcattggc 780
 agaaacggact 790

<210> 64
 <211> 496
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 64
 ctttgacccc tccaaggaaa ggaaccagca ctcataagg tcccactggg caccagggtgc 60
 tgggcttggc gtgtgtgtg ttatcccatt tcagttccc agcaaccctc caagttagct 120
 tcagccccca ccccgcccccc attttacaga aggaaaacac aaggctcagg aagtcaggtg 180
 ccacccaagg aagggtctac ggctcaggga ggagcccagg tccaggtcct gggacctggg 240
 tggtgggggc gtgcagagcc tgagctggga cccagtgtc aggttcagcg gggcccgagc 300
 tgcagcacca ctgccccagg ctgaccgtac tggggggccc gctaaccctct gcctccttcc 360
 cttctacctt cccaggggkaa tgatgcggaa gaggcctaagg gggtcaccag cgaaggtagt 420
 agtccccggc cctgcccggc ctctccttcc cccagggtc tggcctcagg gcctaccctc 480
 accctctccc cttcct 496

<210> 65
 <211> 395
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 65
 tagaaaaggcc attcctcggt agtataatca taaacccact cacaaaaaatg gttcccaatg 60
 tcaaagcccc tgggagaata aggtggacat tcagtccttca aatgccttgg gcagctggcc 120
 tgttttcaag agccctrtgg gaacagatct atgggaagcc atcttccag cctcacctat 180
 agttataact gctgtactcg aagtccacca gcatgaggct gtcagcattt tctggctctg 240
 agagcagcaa gatgttccct gggggaaatgg ggtgagggttc tgctcactcc agagccctct 300
 ggctttcca tcttgggtta ggagactcag atgccttctc ctaccttcctt ggatgtcatt 360
 gtggcagaag acgactggcg atggggtaga ctcta 395

<210> 66
 <211> 353
 <212> DNA
 <213> Artificial Sequence

```

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 66
cattccttcc agactccacc tccctccccc ctcacaggat gggcctgct cccagcctc 60
tggcccacat acctgctgtt cttgagtggg gtagtctgtg ggcctgctt tgttagaaagg 120
ccattcctcg tgagtataat cataaaccctt ctcacaaaaa tggttccaa tgtcaaagcc 180
cctgggagaa taaggtggac attcagttcccaaaatggccct gggcagctgg cctgtttca 240
agagccctrtt gggaaacagat ctatggaaag ccatcttcc accctcacctt atagttataa 300
ctgctgtact cgaagtccac cagcatgagg ctgtcagcat tttctggctc tga 353

<210> 67
<211> 598
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 67
ccatctgagc tatttccca cctctctcta cggtttaagg gcccagcagg agggagggag 60
caatcagact caagcctggt tgcaaatccc ggctctacca ctgcttcct gtctgatctg 120
aacagagttac ctaacctctc cgagcttatac tacaaaagctt gaatgatctt tccctcatag 180
agctattgctg agaataagga gatggggga ggtcacacca tcccaactt accaaggat 240
cttcctctga cagagactga gcaagatcca gctggctgtt gctgtgtgg ttcrcctcc 300
agctgtgcac ctatwtwta accagacacg ttctccagcc cccaaagat acccaggaat 360
tcgaaaggta aartgaaagt cacaacttcc cagcagctcr caatcaagca cagcaaacac 420
gctgctcccccc agcacccctt gcagttccagc cccaccctcc ttgctgctgc gcttagagra 480
gcagcctgag accagacccctt caggtcttcc tcatccaacc cacctgcctg gcacccctcc 540
ggttgggggtt ctgctatagtt cttcaggaag aaagacctgc cactgacata ctgtggga 598

<210> 68
<211> 382
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 68
ttagaggggac atcctcaagc ccagcagagg gggctgcctg gaggaggygt gcctgccaga 60
aaaaactagc cccggggagat ctgggtggca tcacccgggtt gccccaaagga ggttaacccca 120
tggaggttac ctgggcaattt cagccacacg cacraatctc ttccaggctt catcgctagt 180
cagcaggattt ttccatgtca ctgggcttaac ttcttctgg aagtattcaa tgacttcttc 240
agtgaagcgt ttctttctta gttggaaaca aaaaggataa gattggaaaga aagtggctta 300
ccacataat ggcattgagt ataagggttgt tcgggtttaa tcctcctgaa ccagctgtca 360
catgggttat ttttcatggaa gg 382

<210> 69
<211> 398
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 69
cccttctcg agctgattac ggtcacgtcg atcccgtctt tccagtctcc acgagacgga 60
gccccggaaa agagtcgacc ccatgtctg cccggccgc accccacccc tcgggaatcc 120
ccaccgtctt tcccaatcac cttcttcttcaaggcctc ccatcgctcc acgttgagga 180
gcccactagg gccgcgcgtc caggsagctc cacttctcc cgcacgtgcc ctgccaaggaa 240
ccccgaggac cctcccccacc ccacgctgtc tgtttgwgcg ggctgccc aa tgagatgcct 300
gtayaagtcc agggaaagat ggggatttcc tcctcaagat ttaaaactat agtctgaaaa 360
aaatcaactga gaacactctt tccagatctt tcccgctc 398

<210> 70
<211> 398
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 70
ccacttctgt tcttgggcat cagctggttg cctggctgtg ttagtgaccc agcccacaaac 60
agccccctac tctaccctgg ctacatgcag tgcccatctc tgggtcaact gcagagsaga 120
cctggctaat gccaccctctt cttccggctg ctttcagga agaccatgtt caatgaccc 180
ctgcgggtcg atgtgaaaga ctgctctgg tgcaggtggg tggcccccgtg ctccaggggcc 240
ctgccttcc tcctagaaca cagtggcaca gtgctgggtc ccagttgttca gcagagtctc 300
tctcatcatg ggaagctaga aagaagcttc caggaggaga taaccacggc ctcagggatg 360
ccacatccag agccgcctc tcaggctgag gagatcaa 398

<210> 71
<211> 380
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 71
tgaatcctca tctgggaaag tttcaagaat aaaagcmgtc ccatctcagc agtctcgagt 60
gtggtaat gtgagcgggc cctgtgaggc cggggctgag ctgtcccttc cccctgcagg 120
tggcccgagag tggcgagatc ccccatctt gctgcaactt ccccggtggct gtgtgccggg 180
acaagatgtt ttttattctt gggcaaaagcg gagccaaaat aaccaacaac ctcttccagt 240
ttgaattcaa ggacaagacg tgagtactt ggcctgtggg gtggaggggag gacggtcagt 300
tccctcgaat cttctgaat atgaagaayg cctcttgac ctggtgccr tggtaaccat 360
ccttgtgagc tctgcaaaaca 380

<210> 72
<211> 698
<212> DNA
<213> Artificial Sequence

```

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 72
 cagaagcatg gaattgctga caagcacaga gcttggcgtg gggttggagg ttgcatcagt 60
 ctcctgcgt tgctgttagcg aagggtcgca aactgggtgg tttggagcag cagacaggta 120
 ctcacagctt tgagggccaa gagtcccata taaggtgtca gcaagggcag tgccctcaga 180
 gcctcagggg tgggtccttc ctgcctcttc caatttctgg tggtgcccag agttccttga 240
 agtcccttgg ctgcagctg tatcaacttg ctttggctt tacctgccgc ctccctcgg 300
 catctgtgc ttcacacgc cctcttgtaa ggacaccagt cattgcgtta gggcccaccc 360
 taatcccgta tgaccccttc taaaacttatt acctctgcaa agaccctatt tccaaaaaag 420
 gtcacattcc cagtgctggc agttaggacc tcagtgtatc tttgcgggaa cacagttcaa 480
 cctgtaccc atccatcatt ttgtattctg agatctttt ttctgtttt agctatgtga 540
 aaggcatcta ctctttggc ttgatggaaa ccaacttcta cgaccaggca gaaaaactcg 600
 ccaaagaggt aagtgggtcc ttccctaaagggt gcctgacccc tcagggagta gcyggtggct 660
 ggaccaggc atatgagggg caccattcgt gtgtgacc 698

<210> 73
 <211> 698
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 73
 gggggttgtc ttttgcataag agaccatgac caggtctggg acagaggaaa gtcaaataaa 60
 tcacacatta gagttagaag cagaggctca ggctgagccc aggttttatt tccaaaatca 120
 aaatgaaatg cagtgatcaa aggacacaaag gcctcagtgt gcatcattct cattgtggct 180
 ttcaggcggc tggaaagac aggggtgggaa tggtggcttc gggaggtgag gtgtctggg 240
 acttggcCAA gtcttargca agccattcct gcattctggg cctggctccc atgggcccatt 300
 agaaatgaaa atgctttgtg gactgctgag gacggtgcaa gggtaggtt tcccaagctca 360
 ccggatcatg gccagcaccc agggcatcag cttctgcattt atgggggggtt ctgcagggtgg 420
 gaagtccttg gccttcagaa tgacccatg ggcctctgg aagaggtcct ccccaactgc 480
 tgccctccacg cgctggcccc atgtggccag cttgggtcgg cttcgaaga cttggcagcc 540
 agcacccacg ggctgtgggg aaaagggtac agactgggaa tggatggtt tgagggcagg 600
 gatgggcagc atctgatgg gggaccacag atctccagga ggttgcata cacacactta 660
 agcacagtgc catagcccggttgtggcata taaggcagg 698

<210> 74
 <211> 395
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 74
 ctccctgtc cctcctcaga cccctcctcc tcctccaca cggccactgt aaagggtcc 60
 tgcgtcagga gctgccaggc cgaggccag ggcacccsga ggacagctgc tccrgcagca 120
 ctaccccgat gcatgtcttc atacttgaga aaaagcacgt tcgagtcatt gcggtgtcc 180
 cagaactcct gcacgtgctc aaaccaggag ccgtagccca ctgcggagac aggggacagg 240
 gtgagccaca cggctggca ggagaagcgc acacatgggg ccatccccac cccacaggc 300

```

tgccctcctg ccacccagca gccgtatga ggacatcgtg atccctgcgg acaagtctgg 360
caaaggcccc cgaggcactc acgttttag ccatac 395

<210> 75
<211> 383
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<220>
<221> modified_base
<222> (83)..(86)
<223> c or not present

<400> 75
ctggacttggaa ggcacaaatgtc ytgccccccaa cgtgcgggaa gagcagagcg tgcaggcagc 60
rgagactaac aagaaggccct ggccccagag ggcaggaaca ggtggacgaa caaccagatg 120
agagaacgtt ccaggcatgc aagcttagacc caggaatcaa cgggctgagg ctttagcgtcc 180
cctacggcgt ccaccagctt gaccgcgggc ctgctgggccc cggggggagg ggccttcctg 240
ctggggcttgcg gctgcagcgc acgggtgggc attagaggca caatagagca gtttagtttag 300
agctccttggg gggacaggcgc agggcaggaa ccgaggctgg cgatgtttagg gttggcctgc 360
caggacagca caggttgcac caa 383

<210> 76
<211> 385
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 76
tgaatagtgc gttgcagggtc catgcacttg tcagtttgtt catttcctgg aggcttctag 60
ccctgggtgt ccatggccct tgcagatact tgctggtcag gaatgagcct tctgaggcaa 120
gactgcttggaa ttgtccaggc agggctattt atgcccagccc ctttaacttta ttctgcccag 180
acaagaagat gtttgaggtt aagcggcggg agcagctgtt ggcactgaag aacctggcac 240
agctgaacga catccaccag cagttacaaga tccttgcgtt catgtcaag gggctttta 300
aggtgtgtgc aggcagggggg cagctcatgg caggtccagt ctttgatcta ggcactgtatg 360
ggtaaacagg agttccctaa cgggt 385

<210> 77
<211> 357
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 77
acaggagttc cctaacgggt tggtgttcag ggacagggga actgcgcaca cgtaagactt 60

```

gaagtgggt ttaaataaaat ggggatggga gcagtctgtg atgggcaact cgaagccact 120
 cagccctggc gggattccct caggtgctgg agactcccg gacagtgc accgctgctg 180
 atgtgctccc agatggccccc ttcccccagg acgagaagct gaaggatggt atggtctgcc 240
 ctgccccggc ctgtcctccg caccacccga tcttctctag ctgctccttc tctcctgttc 300
 ttgtcaactct tttttctac cggagaatgc cctcttggc caccttctaa gtggtcc 357

<210> 78

<211> 355

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 78

gcagagatca gaggatcgaa taatgggtgc taaaatatct tggaaaagga aacagtccta 60
 tccagatgaa atgtgttcat accgttagaca tgacagagac cagctttgt tcagtgc 120
 ctacctgctg gctgcttctt cggctcctcg aacagatcg ccgagcttgc ggaggaactt 180
 gcygacagcc tctcttagggcg ggcctggc tcatactaga gaagacaagg aaaaggaaat 240
 gtttaggctcc aaagaytgtg ggcagtttttgc caaaaagaat cacygaagag ctgtcatttg 300
 aaagtgttttgc acccccaggc tcttcytc caacagttac tgaatgccac tgcca 355

<210> 79

<211> 399

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 79

ccttagaagc ctggaactct tggtaaatag gtagcttattt gtatgaacag gaaaactgagt 60
 cagcttatta gggaaatgata agattctgca gaagaacata ttgtatagtt ttccgtagaa 120
 agaggagagg cttaaattctt tttgttttgc aacttagatc aaattactca ttaaaacaaga 180
 tggatgacattt gaaatccccg cctatgaaga catcttcagg gatgaagagg aggtatgaaga 240
 gcattcagga aatgacatgt atgggtcaga gccttctgrg aagcgcacac ggtttagaaga 300
 ggttagtttgc ggtctctcagc agtataccca gaggaacttg cactccaga ggtcggaggt 360
 catccctgaagc cttggccaggc caaggtgtac tgagggcag 399

<210> 80

<211> 379

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 80

ttcccacctcc cttgttggtc tccctggccc ctgcctggct cccytctgccc tcttagagct 60
 tgtaactgtc tttgttgc tctcttgcag acttggcat agacctcgcc cctggccct 120
 gcaaggagcg ggtgtgaatg cttcacggcc ccttagctac ctgtgacacc ttgtgcccac 180
 aggttccgtt gtaagatgaa agtgcgtggc ttcaactatct cgggagccag tcacccatc 240

```

tgccctgtga tgctgggtga tgcccggtg gcctctcgca tggcgatga catgctgaag 300
agaggttaagg gtgctgagac aaggaaactg gtggtgggtc ctgagagaag agaaaggaa 360
accccttagac tgtgaccca 379

<210> 81
<211> 398
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 81
gccagcatta aataaaagag ccagaatta aaattttagt gtcctaattgc ctctacataa 60
tttgcgtat tttccttca tggcttagct ataggaaatt tacccctctgg gctctctcat 120
gctctctcg agccttctta actcgttcta ttcttctttt gatctctcgct tttcacgtt 180
ttcgctcata ctttctccga tggctcgaa tttctgtgc cttagaaaaaa gagccatagc 240
aaaataagct tgctccaaa gctgaataac atcaacacaa atattctttg tagagagatg 300
ttaattcaa catgcagtc agaaaaatga cagatttgc ttgtasaaaa agacctaaca 360
caagctaagc ctttaagaaa accaacctca actgcatg 398

<210> 82
<211> 371
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 82
tctgtccctt gtcctcatcc ccacccatga gcaggacatg aaccccccaga gcctgccaga 60
gcatgctctg cacagtaagt aagtgtgtt ccaggcacag aacgcccaga agaaggccca 120
gagggcggcc cattcccgga gagagctca gtacctgtcc tgaagctgga cacggtgcc 180
ccagttcaag gatttacgt gatttgaac agcttctgccc atttcttcc tggatgtt 240
cgaaacaaaaa tggaaaatcc acaacacagg tggatgtgc agggcctcac ratggactat 300
tagattcaaa tggtacatcc atagaaatat caaaaaaaaa gatgtttt aaaggtggca 360
aaacgtgaca t 371

<210> 83
<211> 395
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      amplicon sequence

<400> 83
cggactgagc ttttacccct gggctgtgg tggcggtgg ggaaaggcca tggatcaggg 60
ccttagcagag gccttgggtg gcatggccaa ttggaggcct tggccctggc cagtggtggc 120
cccgccatgc gtccccatcc cgcatcactc ggtctctccc acaggatga cggAACACAC 180
caagaacctc ctacggcct tttatgagct gtcgcagact caccgggtta atggcatccc 240
ccaaagctgt ggtgtgaccs tggcaatcc ctggggcctc tcaactccat gctgaggtgg 300

```

gtcagaccca cagcgccctga cctcaggctc cctctggct gggcctggtc ccaggtgctg 360
 ggatttgcga tgggcctgcg gggAACATCT agatc 395

<210> 84
 <211> 328
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 amplicon sequence

<400> 84
 atctcacccc tggattttcc caggccaggc tgtgcaccca aaaactgggg ctgcagggaa 60
 ggggtggttc cgacccctgt ctcacctggg gtcatcctca aagagatact ggatcccctg 120
 gccatgggtgc acatcccagt ccacgacgag gatcctgggt acagacagecg ctggtggcaa 180
 aggggcaggg cctcccacct ccaggagccc ggccagggtat gggaaagggtgc tggctgggtt 240
 ctctcgccctc ctgcgcgycgc ctttgctgtg tggcctgggc ccaccccccgcagcc 300
 tggcacacac ctgtgtagcc cgtgttcc 328

<210> 85
 <211> 483
 <212> DNA
 <213> Mycobacterium chelonae

<400> 85
 acgggtgagt aacacgtggg tgatctgccc tgcactctgg gataagcctg gaaaactggg 60
 tctaataccg gataggacca cacacttcat ggtgagtggt gcaaagctt tgcggtgtgg 120
 gatgagcccg cggcctatca gcttgggtt gggtaatgg cccaccaagg cgacgacggg 180
 tagccggcct gagagggtga cccgcacac tgggactgag atacggccca gactcctacg 240
 ggaggcagca gtggggata ttgcacaatg ggcgcaagcc tgatgcagcg acgcccgcgtg 300
 agggatgacg gccttcgggt tgtaaacctc tttcagtagg gacgaagcga aagtgacggt 360
 acctacagaa gaaggaccgg ccaactacgt gccagcagcc gcgtaatac gttagggtccg 420
 agcgttgtcc ggaattactg ggcgtaaaga gctcgttaggt ggtttgtcgc gttgttcgtg 480
 aaa 483